According to the composition of the gas and the excess air, there will be obtained different quantities of combustion, per kilogram of coal.

By computation it can be shown that one of the best grades of coal mined in the Donietz basin (central Russia) requires for the combustion of 1 kg of coal an air supply of 8 m^3 71, and the volume of the products of combustion is 9 m^3 04, theoretical or neutral combustion.

According to the above, the volume of gases given off by the combustion of 1 kg of this coal will be

Theoretical air supply.....	9 m^3 04
1.25 times theoretical air supply	11 22
1.50	13 39
1.75	15 59
2.00	17 75

For producer-gas-fired furnaces, 1 kg of coal gives about 5 m^3 22 of producer gas. With a blower combining the air and the steam, this requires 3 m^3 16 of air for the primary supply and 5 m^3 54 for the secondary air supply. The volume of the products of combustion with the theoretical air supply arc 9 m^3 71; and with an air supply of 1.50 times the theoretical volume the volume of the products of combustion will be 12 m^3 54.

Knowing the quantity of combustible which will be used in a unit of time and the resulting volume of the products of combustion, there is another factor which must be determined: *the time that the products of combustion or hot gases remain in the heating chamber of the furnace.*

(i) The average composition of this coal is:

	Per cent
C.....	84.75
H_2.....	4.80

0_2.;	4.83
N_2.°	1.44
S	1.48
Moisture	0.90
Ash	1.80

For larger quantities of moisture and ash, it would be necessary to correct the air supply and the products of combustion volumes accordingly.